***Energy Efficiency Question 2**: What studies, data, or reports should be reviewed or prepared to appropriately measure if the current energy efficiency programs are cost effective?*

Executive Summary

1. Electric and natural gas providers collect a broad range of data to assess the cost effectiveness of Michigan's Energy Optimization (EO) programs. Each year, providers must conduct cost-effectiveness analyses of their EO programs. The findings and other details are available in annual reports filed with the Michigan Public Service Commission (MPSC).

2. Tests of cost effectiveness are common in all states that have energy efficiency standards, and different tests can be applied. The Utility System Resource Cost Test (USRCT) is a credible measurement of energy efficiency program cost effectiveness and is the primary test used in Michigan to determine the cost effectiveness of a provider's program.
   - The USRCT compares long-term avoided power supply costs to the costs of implementing the EO program.
   - A score of 1.0 or greater on this test (benefits are equal to or greater than the costs) indicates a cost-effective program.

3. To date, the MPSC has concluded that Michigan's EO programs are cost effective.

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It is important to ensure that the funding for energy efficiency programs is used in a cost-effective manner – that is, that the savings exceed the cost. To properly assess program cost effectiveness, it is essential to collect and track detailed costs and savings data. Key inputs to cost-benefit analyses include:

- Actual program delivery costs (incentives/rebates, marketing, and administration)
- Accurate energy savings information for individual energy efficiency measures and associated costs
- Verification that energy efficiency measures are actually installed
- Appropriate avoided cost values for electricity and natural gas

PA 295 of 2008 requires that all natural gas or electric providers or their administrator submit an EO plan for their territory to the MPSC for approval. The plan must encompass between 2 and 6 years of EO programs and be cost effective according to the USRCT cost test, which is discussed further in the next section. Data are available for all EO plans for all electric and gas investor-owned utilities, municipal utilities, and electric cooperative in Michigan.

PA 295 also requires providers to report the results of their EO program implementation efforts to the MPSC each year. The reports include program savings (verified by a third-party evaluator), program costs, and the cost-effectiveness calculations for the programs.

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EO plans and reports are available on the MPSC's web site in the energy efficiency section.[1]

PA 295 requires that energy savings be certified by an independent expert evaluator. All cost-effectiveness analyses are based on the savings achieved, as certified through the annual third-party certification process.[2] This third-party certification process causes the 6–8-month time lag in reporting final program results after the year end. Providers also conduct regular process evaluations to ensure that programs are operated effectively and identify opportunities for enhancement.

2. Tests of cost effectiveness are common in all states that have energy efficiency standards, and different tests can be applied. The Utility System Resource Cost Test (USRCT) is a credible measurement of energy efficiency program cost effectiveness and is the primary test used in Michigan to determine the cost effectiveness of a provider's program.

The current method that Michigan uses to evaluate cost effectiveness of EO programs is the Utility System Resource Cost Test. This test compares the benefits, in the form of avoided power supply costs attributable to the energy efficiency program (e.g., reduced fuel costs), to the utility's costs of implementing the program. As the name suggests, this test measures cost effectiveness from the utility's perspective. It is also referred to as the Provider Administrator Cost Test, or PACT.[3]

Benefits are compiled by aggregating the energy savings of all technologies and approaches implemented under the EO program and estimating the power supply costs avoided due to those savings. This approach to calculating avoided cost benefit is a "bottoms up" approach in evaluating cost effectiveness.

Costs in the USRCT calculation are simply the utility costs to implement the program. These generally include the incremental costs to run the program such as the costs for administration, marketing, and rebates and incentives. While the benefits account for avoided costs years into the future based on the estimated lifecycle of the energy-efficiency technologies implemented, the costs are only for the years in which the program is being evaluated. Thus, the calculation is similar to a net present value calculation that evaluates the financial benefit of an investment and the future stream of cash flows relative to that initial investment.

The USRCT is calculated by simply taking the net present value of the avoided power supply costs divided by the net present value of the program costs. If the ratio is 1.0 or greater, the program is

[1] Reports are available on the MPSC's website: http://www.michigan.gov/mpsc. For Consumers Energy, the 2009–2011 reports are submitted under MPSC Case No. U-15805. DTE Energy's reports for this period are available under MPSC Case Nos. U-16358, 16359, and 16737.

[2] This process: (1) compares preliminary results to data maintained in a tracking system to ensure an accurate process for calculating savings by measure, program, and total portfolio; (2) confirms, where applicable, that the equipment specified on the incentive applications and logged in the tracking system met program requirements; (3) reviews a random, statistically significant sample of incentive applications for each program to determine that data were consistently and accurately represented in the tracking systems; and (4) ensures that correct factors were used to calculate savings, including: the "deemed" savings values (in the Michigan Energy Measures Database maintained by the MPSC with funding from utilities), installation rates and engineering adjustments, and appropriate "net-to-gross" factors, which reduce total savings in order to address "free ridership." Free ridership refers to the customer receiving the program incentive for an action (e.g., installing high-efficiency furnace) he/she would have taken anyway.

[3] *Is it Time to Ditch the TRC? Examining Concerns with Current Practice in Benefit-Cost Analysis*, Chris Neme, Energy Futures Group, Marty Kushler, American Council for an Energy-Efficient Economy, 2010 ACEEE Summer Study on Energy Efficient Buildings, 2010. Available at: http://energy.maryland.gov/empower3/documents/ ACEEEreference study-NemeandKushler SS10_Panel5_Paper06.pdf.

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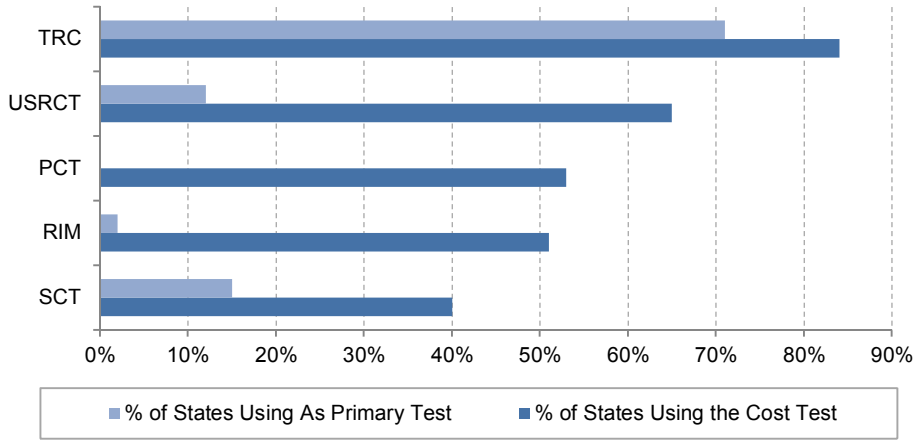
deemed cost effective. The test is relatively simple to develop and calculate given general utility costs and power supply forecasts.

Many providers of energy efficiency programs around the country calculate multiple cost effectiveness scores. Other tests include:

- Total Resource Cost (TRC) – Considers not only avoided costs and program costs, but also includes the costs the customer incurs installing the energy efficient technology
- Participant Cost Test (PCT) – Considers only the program participant's (customer's) economic benefits and costs
- Rate Impact Measure Test (RIM) – Considers the ultimate impact on billing rates
- Societal Cost Test (SCT) – Similar to the TRC, the SCT adds society benefits and costs to the calculation

The most widely used is the TRC test. USRCT is the second most common test. The USRCT is used as the primary test in 12% of states (including Michigan). Exhibit 1 gives an indication of the prevalence of these cost tests in the United States.

EXHIBIT 1. Use of Various Cost Tests by States



SOURCE: A National Survey of State Policies and Practices for the Evaluation of Ratepayer Funded Energy Efficiency Programs, Martin Kushler, Seth Nowak, and Patti Witte, February 2012.

There is no national consensus on which test is the best for measuring energy efficiency programs. Every state uses some measure of "utility system avoided costs" as a benefit, and every state treats "energy efficiency program costs" as a cost. While many utilities use the TRC test, the elements measured in this test vary widely. The USRCT is simpler than other tests and can be calculated using data that is already available by the utility.

3. To date, the MPSC has concluded that Michigan's EO programs are cost effective.

PA 295 requires that the MPSC provide an annual statewide summary of all energy optimization programs and progress of the providers in achieving energy savings requirements, costs of the

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programs, and the cost effectiveness of the programs.[4] For program years 2010 and 2011, the MPSC summarized the costs and benefits (referred to as lifecycle savings) of the EO programs, as shown in Exhibit 2.

EXHIBIT 2. Michigan Energy Optimization Cost-Benefit Results – 2010 and 2011

Program Year	Program Spending	Lifecycle Savings	Savings per Dollar Spent	Commission Report Title
2010	$113 Million	$554 Million	$4.88	*2011 Report on the Implementation of P.A. 295 Utility Energy Optimization Programs*
2011	$205 Million	$709 Million	$3.55	*2012 Report on the Implementation of P.A. 295 Utility Energy Optimization Programs*

NOTE: 2010 results were based on cost-effectiveness calculations for DTE Energy and Consumers Energy. 2011 results were based on programs results for DTE Energy, Consumers Energy, and Efficiency United. This covers approximately 90% of EO program activities in the state.

For both 2010 and 2011, the MPSC has concluded that Michigan's EO programs collectively represent a cost -effective investment for the state of Michigan. The 2012 data will be available after verification of costs and savings by an independent evaluator, and included in the MPSC's November 2013 report.

As utilities and the state examine different options for meeting Michigan's energy needs in the future, it is important to consider these findings. Cost effectiveness is not, however, the only determinant when examining demand- and supply-side options to meet our long-term needs in a reliable, affordable manner. As discussed further under Energy Efficiency Question 7, EO programs can result in long-term benefits but can put upward pressure on rates in the near term. This is important to consider as part of utility planning and policy development.

[4] Reports available at www.michigan.gov/mpsc (see energy efficiency section, EO Implementation Reports).